Two New Species of Passionflower (*Passiflora,* Passifloraceae) from Southwestern Mexico

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ABSTRACT. Two new species of passionflower vine (*Passiflora,* Passifloraceae) from southwestern and southern Mexico are described and illustrated. *Passiflora mcvaughiana* and *P. manantlanensis,* both in subgenus *Decaloba* (DC.) Reichenbach, belong to sections *Cieca* (Medikus) DC. and *Decaloba,* respectively. This brings the number of named native species of *Passiflora* recognized in Mexico to 68, with 21 native to the southwestern area known as Nueva Galicia.

Key words: Mexico, Nueva Galicia, *Passiflora,* Passifloraceae.

Revision of collections for a treatment of the Passifloraceae of Mexico, of which *Passiflora* is the only genus present, has shown that approximately 10% of the 68 native species remain undescribed. Two new species from the subtropical and temperate mountains of southwestern Mexico are described here in preparation for a treatment of the family for *Flora Novo-Galiciana* (MacDougal, in prep.). The first of the new species treated here has been known from collections for two centuries, but is only now being recognized. The other was collected during studies of the flora of the Manantlán region (Vázquez et al., 1995).

Passiflora mcvaughiana J. MacDougal, sp. nov. TYPE: Mexico. México: Mpio. Temascaltepec, N of Temascaltepec on rte. 134, ca. 11 mi. S of road to Tequesquipán, 6200 ft., oak woods, 24 Aug. 1978 (fl), *MacDougal 369* (holotype, DUKE; isotypes, IBUG, MEXU). Figures 1, 2.

Passiflora scandens ad sectionem *Ciecam* pertinens. Folia transverse oblonga leviter peltata biloba petiolis eglandulosis vel biglandulosis; nectariis in lamina nullis; lobis acutis, venis lateralibus angulum (125–)140–190° inter se formantibus. Inflorescentia bracteis nullis vel bractea setacea solitaria praedita. Flos colore pallide viridi-flavo; petalis nullis; coronae filamentis biseriatis, exterioribus 5.5–6.7 mm longis; operculo plicato; ovario glabro. Fructus ex bacca purpurea parva constans; seminibus 5.0–6.2 mm longis, 4.0–4.7 mm latis, foveolato-reticulatis.

Low-climbing herbaceous perennial vine (0.5–) 1–3 m, rarely to 8 m, appearing glabrous but actually sparsely pubescent with unicellular trichomes 0.3–0.8 mm long on stem near nodes, petiole, base of lamina, and main veins of lamina, also lightly and microscopically puberulent throughout with antrorsely appressed curved sausage-shaped trichomes. Stem terete, drying subangulate, becoming corky with age; actively growing shoot tips straight, not cernuous. Prophyll of the vegetative ramifying bud 1, acutely 3(–5)-lobed. Stipules 5–7.5 mm long, 0.4–1.0 mm wide, narrowly linear-lanceolate. Petioles 1–4(–5.5) cm long, eglandular or with one or two saucer-shaped nectary glands 0.5–2 mm diam., the glands then 0.55–0.75(–0.85) the distance from the base toward the apex of the petiole. Laminas 1–4(–7.5) cm long along central vein, 6–18(–23) cm wide, peltate 1–5(–7) mm from margin, transversely elliptic to transversely narrowly elliptic (widely divaricately bilobed), ratio of width to central lobe length 3.3–6.5(–9.0), radiately ca. 5-nerved, with a major vein going to the point of each lateral lobe, and a central vein extending to the truncate margin or into a short deltoid or obtusely pointed obsolete lobe, coriaceous, sometimes variegated along the main veins, the margins entire and hyaline, the lateral lobes acute, the angle between the primary lateral veins (125–)140–175 (–190)°, the ratio of lateral to central lobe length 1.7–4.5; laminar nectaries always absent. Peduncles (1)2 per node, uniflorous, (9–)12–35(–50) mm long; bracts absent or sometimes 1, setaceous, less than 1 mm long. Distinct inflorescence sometimes present on older plants, with flowers borne on an axillary condensed shoot at least 8 cm long with aborted laminas. Flowers ca. 1.5–2 cm diam., pale greenish yellow, the floral stipe (pedicel distal to articulation) 3.5–7 mm (to 9 mm in fruit); hypanthium 8–9 mm diam.; sepals 8–10 mm long, 4.5–6.3 mm wide, ovate-triangular, reflexed at anthesis, pale yellowish green; petals none; filamentous corona in 2 series, the outer series 5.5–6.7 mm long, filiform to linear, spreading upward and outward at ca. 45°, pale yellow, with purplish hue on the proximal half, the inner series 2.5 mm long, suberect, capitellate-dilated at apex; operculum 2 mm long, membranous, plicate; limen (disk) 6 mm diam., speckled with purple, its raised edge slightly inclined away from the column; staminal filaments connate 4–5 mm along androgynophore, the free portions 3–3.5 mm long; anthers 2.3 mm long; ovary 2–2.5 mm long, 1.7–2 mm wide, widely obovoid, glabrous; styles 4–5 mm long including capitate stigmas. Fruit 10–14 mm long, 10–13 mm wide, subglobose, lacking stipe, glabrous, bluish black with glaucous bloom; mature arils ca. 3 mm long, whitish, translucent, loosely fitting over the basal ⅓ to ½ of seed, tough, not gelatinous; seeds 2–10 per fruit, (5.0–)5.5–6.2 mm long, 4.0–4.7 mm wide, 2.4–3.0 mm thick, widely obovate, campylotropous, foveate-reticulate with 12–18 foveae, the edges of the pits often forming 1 or 2 longitudinal ridges, the chalazal beak broadly and bluntly conical, nearly erect to slightly inclined toward raphe.

Ecology. Moist hillsides and barrancas, in oak, oak-pine, or pine forest, or montane mesophytic forest with *Alnus, Carpinus, Clethra, Ardisia, Tilia, Podocarpus, Magnolia, Meliosma,* (1100–)1500–2000 m, flowering June–October, fruiting July–November.

Passiflora mcvaughiana is one of the two species that were reported from southwestern Mexico by Killip (1938) under the name of *Passiflora coriacea* Jussieu. The other was *P. obtusifolia* Sessé & Mociño, extremely similar vegetatively to the new species and probably its sister species. All these belong to section *Cieca* (Medikus) DC., the apetalous group of *Passiflora. Passiflora mcvaughiana* is distinguished from *P. coriacea,* which does not occur in southwestern Mexico, by the few-seeded fruits with large seeds, lack of laminar nectaries, and petiolar nectaries often absent. The diagnostically large seeds are the largest in section *Cieca*; in contrast, the seeds of the closely related *P. obtusifolia* are obovate and 3.9–4.4(–5.0) mm long by 2.1–2.8(–3.2) mm wide. Petiolar glands number 0–2, and their presence is often polymorphic within one individual. The outer corona is thicker and much longer than in *P. obtusifolia* (see Fig. 2), a species of lower elevations. Leaves from non-fertile or pre-reproductive nodes on the middle part of the plant have longer petioles, are more obviously peltate, are longer and wider, and have a narrower angle between the lateral veins; these leaves are represented in the extremes of the leaf measurements given above.

The name "Passiflora mcvaughii" [MacDougal ex Klucking] was invalidly published with only an English description (of foliar features), an illustration of a leaf, and the citation of [MacDougal] *369,* the type-collection of *P. mcvaughiana* (Klucking, 1992). The leaf illustrated is a very unusual variation, being transversely 4–5-lobed; this leaf came from the lower part of a sterile shoot.

This new species is not rare at higher elevations from Jalisco, spottily all the way perhaps to Oaxaca. Liebmann's "Rio Hondo" collection was probably made in the Distrito de Miahuatlán of Oaxaca, for in October 1842 Liebmann traveled from Ciudad Oaxaca southward to the coast (G. Tucker, pers. comm.). This species was cited as "*Passiflora* sp. nov. 2" in Vázquez et al. (1995: 211). At the type locality in México, it is associated with *P. pavonis* Masters.

McCormick (1982: 191) screened leaf samples of *MacDougal 369GR* for flavonoids, and found no detectable levels of *C*-glycosylflavones or flavonol 3-*O*-glycosides, the latter often found in other members of section *Cieca,* though not in her test of the putative sister species, *P. obtusifolia.*

Passiflora mcvaughiana was first collected by the Royal Botanical Expedition to New Spain two centuries ago. It is a great pleasure to name this new species in honor of Rogers McVaugh (b. 1909) for his contributions to our understanding of the history of botanical exploration in Mexico and of tropical botany in general. His many fine collections and detailed observations with rich label data allowed me to explore and re-collect populations of passionflowers across Mexico during my field studies of 1978–1980, resulting in many discoveries.

Paratypes. MEXICO. Locality unknown: *Sessé & Mociño 4457* [annotated "Passiflora peltata N."], (F, frags; MA 2 sheets, F neg. nos. 47343, 47344); *Sessé & Mociño 4458* [annotated "Passiflora pusilla N."], (F, frag; MA, F neg. no. 47345). **Guerrero:** near river in bottom of gorge near Omiltomi [Omiltemi], 6300 ft., 26 Oct. 1944 (sterile), *Sharp 441532* (MEXU). **Jalisco:** cañada que sube al Filo de la Vaca, por la toma de agua, El Zarzamoro, 1980 m, 22 July 1992 (fr), *Cuevas & Guzmán 4198* (CHAPA); Arroyo San Campus, Sierra Manantlán Occidental, 1–2.5 km distancia aérea al SW del Rincón de Manantlán, entre el puente rústico y el cañón, 19°35′30″N, 104°13′30″W, 1560–1620 m, 4 Jan. 1985, *Judziewicz & Guzmán 5080* (IBUG, WIS (2)); San Sebastián [del Oeste], trail to El Ranchito, 1500 m, 10 Jan. 1927 (sterile), *Mexia 1448* (CAS, F, UC, US [US sheet cited by Killip as *P. coriacea, Mexia "1148"*]); Sierra de Manantlán, S & W of the divide between Aserradero San Miguel Uno and Durazno, moist barranca above stream, pine forest zone, 1700 m, 7 Nov. 1952 (sterile), *McVaugh 14008* (MICH); Mpio. Talpa, km 22, brecha from El Tuito to Cuale, 1100 m, 20 Feb. 1990, *Ramírez Delgadillo & Pérez de la Rosa 1976* (IBUG); Cuautitlán, 2–3 km al NW de Telcruz, 1500 m, 13 Nov. 1991 (fr), *Santana et al. 5544* (WIS). **México:** Distr. Temascaltepec, Rincón, [19°01′N, 99°58′W], 1960 m, 27 Dec. 1932 (fl, fr), *Hinton 3030* (ASU, BM, DES, K, NY, US); Distr. Temascaltepec, Rincón, "canal bank," 2000 m, 19 Sep. 1933 (fl, imm. fr), *Hinton 4655* (BM, K, MEXU, S); Mpio. Temascaltepec, clones of type-collection cultivated at Duke University 1978–1981, *MacDougal 369GR*

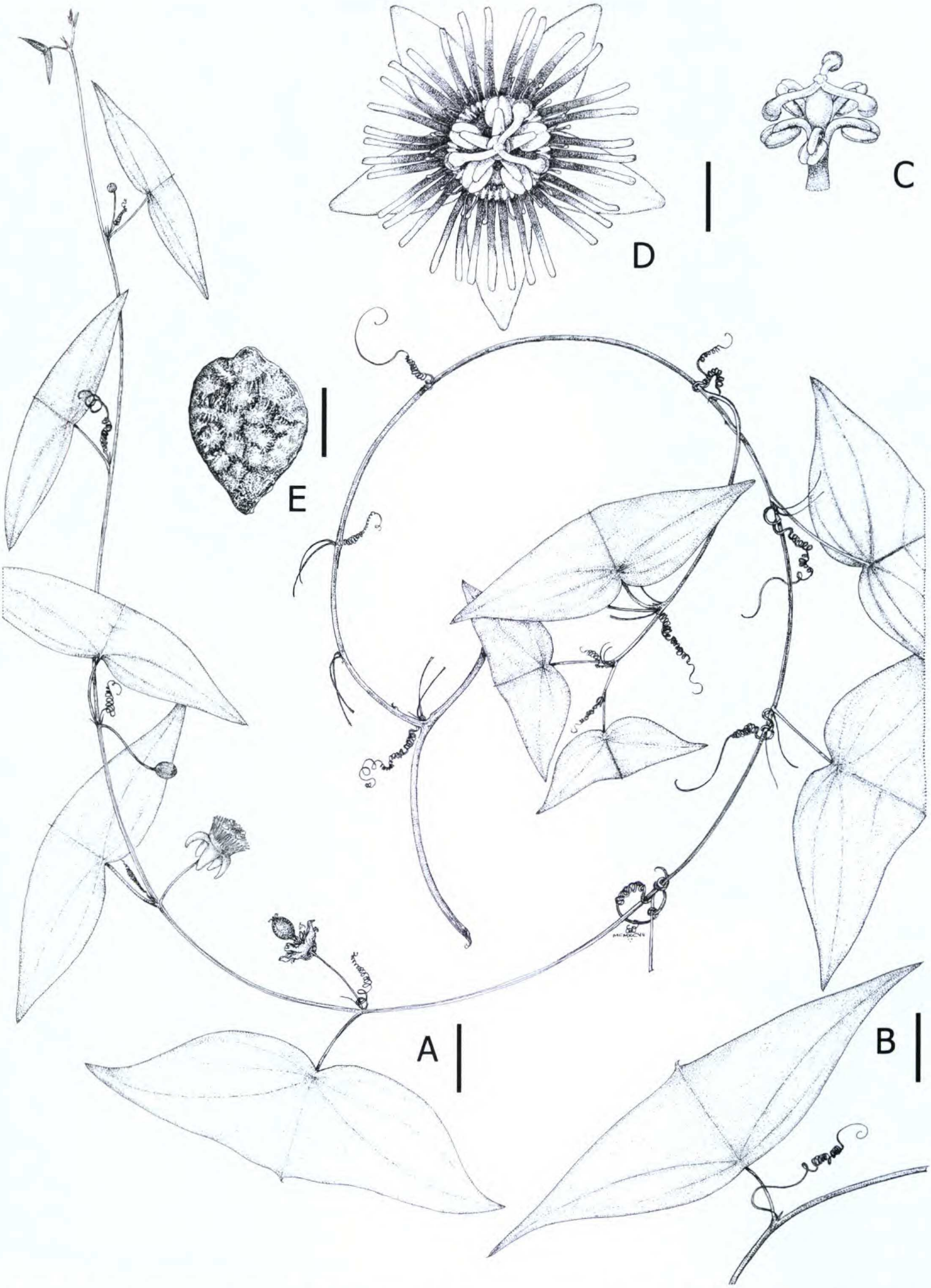

Figure 1. *Passiflora mcvaughiana* J. MacDougal. —A. Flowering portion of vine (*MacDougal 369*). —B. Leaf from *McVaugh 14008*.—C. Floral column with stamens and pistil. —D. Flower. —E. Seed. C–E from *MacDougal 369GR.* Scale bars: A, B = 2.0 cm; C, D = 5 mm; E = 2.5 mm.

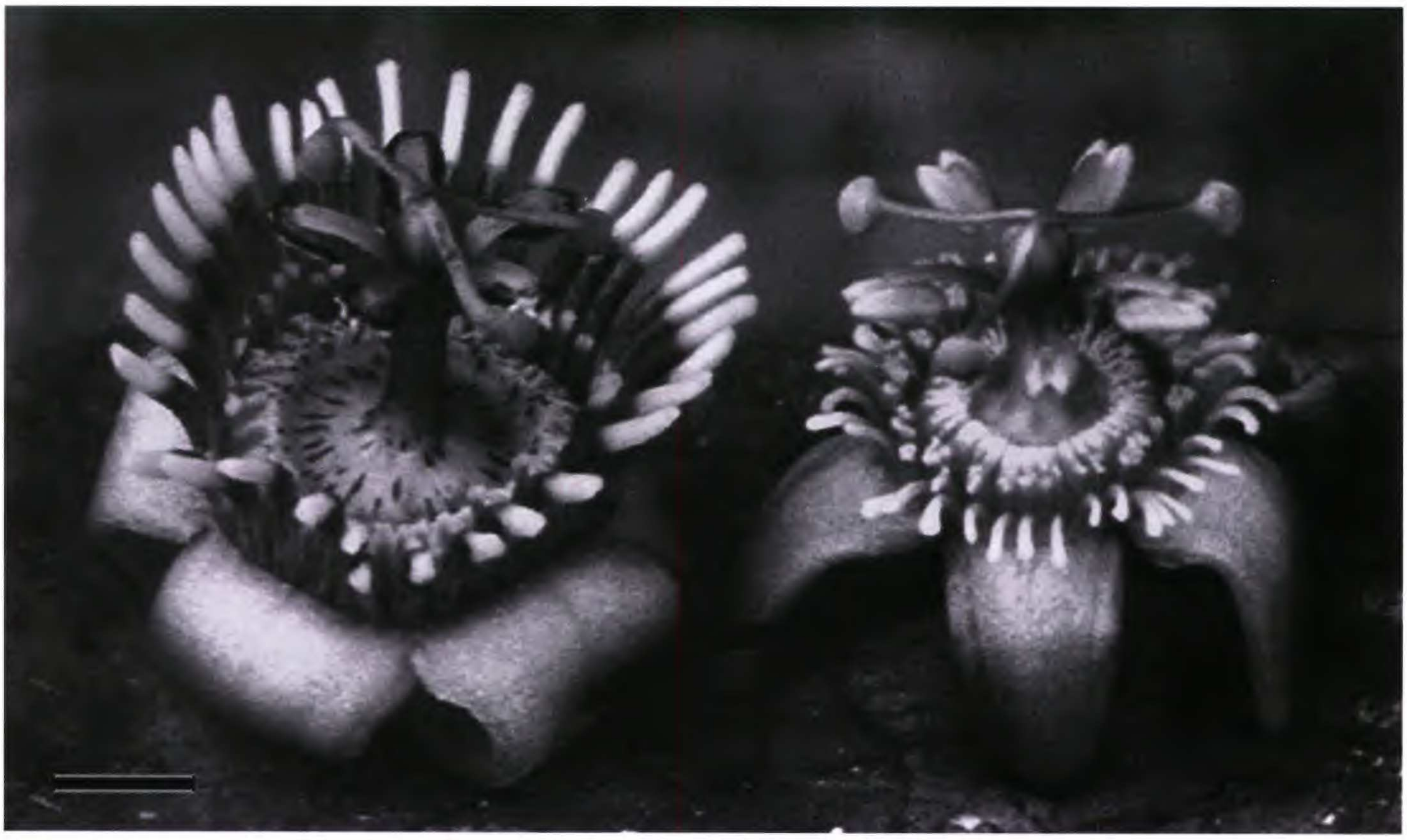

Figure 2. Flower of *Passiflora mcvaughiana* J. MacDougal compared to the closely related *P. obtusifolia* Sessé & Mociño. —Left, *Passiflora mcvaughiana* (*MacDougal 369GR*). —Right, *Passiflora obtusifolia* (*MacDougal & Miley 495GR*). Scale bar = 3 mm.

(DUKE, MICH, MO). **Oaxaca?:** [Distr. Miahuatlán?], Río Hondo, Oct. 1842 (fl), *Liebmann 4080 (Passiflora 3)* (C).

Passiflora manantlanensis J. MacDougal, sp. nov. TYPE: Mexico. Jalisco: 3–4 km al E de Corralitos, 19–20 km al SE de Autlán, 19°36′50″N, 104°16′07″W, 1650–1750 m, 2 Mar. 1988 (fl, imm. fr), *Cuevas & Núñez 2307* (holotype, IBUG no. 97289; isotypes, WIS, ZEA). Figure 3.

Passiflora scandens ad sectionem *Decalobam* pertinens. Folia biloba petiolis eglandulosis; lobis acutis, venis lateralibus angulum 30–60° inter se formantibus. Pedunculi (2–)3–9-flori; bracteis 2.7–13 mm longis, 1–10 mm latis, ambitu ovatis vel late lanceolatis, profunde 5–9-fidis vel -fissis. Flos colore perpallide viridi-flavo vel eburneo; coronae filamentis biseriatis, exterioribus 3–4 mm longis; operculo plicato; ovario dense pilosulo vel subglabro. Fructus ex bacca purpurea parva constans; seminibus (7)8–9-sulcatis.

Climbing herbaceous vine to at least 3 m, densely short-pubescent to pilosulous throughout with suberect and straight or slightly antrorse-curving unicellular trichomes (0.1–)0.4–1.0(–1.4) mm long. Stem slightly compressed, in cross section a shallow triangle with rounded edges, densely pilosulous; posture of shoot tip unknown. Prophyll of the vegetative ramifying bud 1, lanceolate. Stipules 4–9 mm long, 0.5–0.7(–0.9) mm wide, linear to linear-triangular, drying brownish. Petioles 1–2(–3) cm long, eglandular. Laminas (5.5–)7–15(–16.5) cm long in outline, 3.8–11(–14) cm long along central vein, 4–12(–14) cm wide at widest point, truncate-elliptic in outline, shallowly to usually deeply bilobed ⅕ to ½ the distance to the base of the lamina, central vein length always equal to or shorter than width of leaf, not variegated, the margins entire, the lateral lobes acute, rarely also abruptly rounded apically, the angle between the primary lateral veins (30–)35–55(–60)°, the ratio of lateral to central lobe length (1.2–)1.4–2.3, the central vein ending in a 1–5 mm long mucro, rarely a central lobe evident but then very much shorter than lateral lobes and nearly obsolete and obtuse or rounded; laminar nectaries absent. Peduncles (1)2 per node, (2)3–9-flowered, the primary axis (5–)8–15 mm long to the first branch, secondary axes (and tertiary axes, if present) 2–10 mm long, pedicels (ultimate branches below articulation of flower) 4–15 mm long; bracts 2.7–10(–13) mm long, (1–)1.5–8(–10) mm wide, ovate to widely lanceolate in outline, deeply 5–9-fid or -cleft, the center segment always much the longest. Flowers ca. 2–2.5 cm diam., very pale greenish yellow (*marfil*, *verde*) flushed centrally with dull violet, apparently facing above horizontal at anthesis; floral stipe (pedicel distal to articulation) absent or to 1 mm long in fruit; hypanthium ca. 4.5 mm diam.; sepals 8–12 mm long, 3–3.5 mm wide, narrowly lanceolate-oblong,

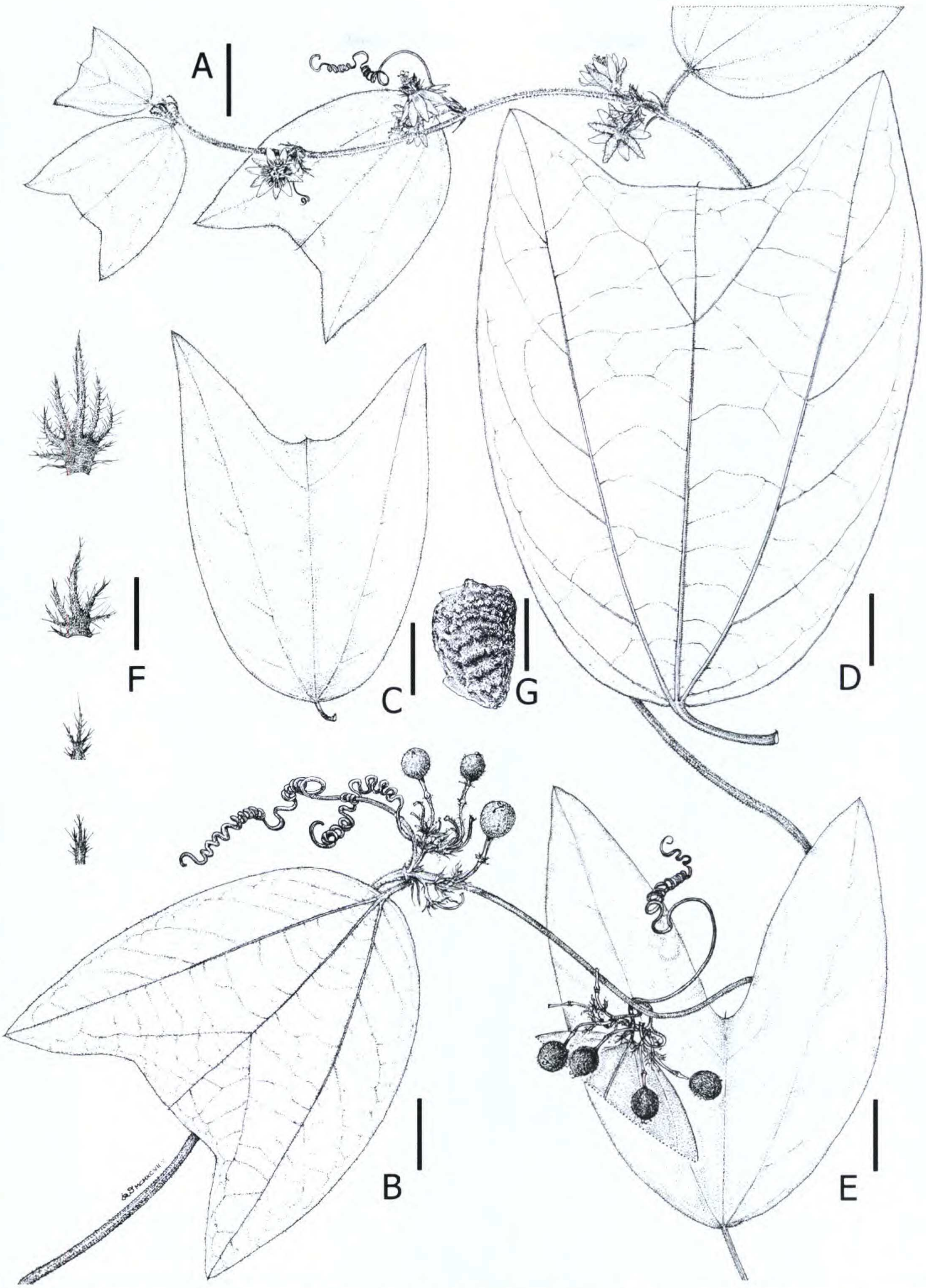

Figure 3. *Passiflora manantlanensis* J. MacDougal (all drawn from *Cuevas & Núñez 2307* except as noted). —A. Flowering portion of vine. —B. Fruiting portion of vine. —C. Leaf from *Vázquez 3953*.—D, E. Leaves from *Cuevas & Rosales 1914*.—F. Variation in four bracts from different positions in the same inflorescence. —G. Seed. Scale bars: A, B, C, D, E = 2.0 cm; F = 5 mm; G = 2 mm.

pale greenish yellow with flush of violet at base; petals 7–10 mm long, 1.5–2.5 mm wide, narrowly oblong, very pale greenish yellow or whitish, with flush of violet at base; filamentous corona in 2 series but only the outer one conspicuous, the outer series 3–4 mm long, filiform, slightly dilated distally, cream or pale yellowish, the inner series reduced in size and sometimes in number, 1–1.8 mm long, capitellate; operculum 1–1.8 mm long, membranous, plicate, tinged purplish, the margin erose-lacerate and papillate; limen (disk) 2.5 mm diam.; staminal filaments connate 4.5–7.0 mm along androgynophore (androgynophore appearing 4–6 mm long in fruit), the free portions 3.8–4.5 mm long; anthers 2.5 mm long; ovary very widely ellipsoid, densely pilosulous to very nearly glabrous, ovary ca. 2 mm long, 1.7 mm wide, the styles ca. 4.5 mm long including capitate stigmas. Fruit 1.2–1.5 cm long, 1.0–1.4 cm wide, widely ellipsoid to globose, lacking stipe, lightly pilosulous to glabrescent, purplish black when mature; arils unknown; seeds 3.3–3.7 mm long, 2.2–2.5 mm wide, 1.5–1.7 mm thick, elliptic to slightly obovate, nearly symmetric to slightly obcampylotropous, transversely sulcate with (7–)8–9 sulcae, the ridges verrucose, the chalazal beak suberect.

Ecology. Montane mesophytic forest, with *Podocarpus, Matudaea, Saurauia, Cornus, Conostegia, Ostrya,* or montane mesophytic forest mixed with tropical deciduous forest, with *Podachenium, Inga, Cleyera,* or mixed pine and oak forest, 1600–1900(–2300) m, flowering February–May, fruiting March–June.

Common names. *Pasionaria, pasiaria, pasión* (Jalisco).

Passiflora manantlanensis is assigned to subgenus *Decaloba* (DC.) Reichenbach section *Decaloba* on the basis of its eglandular petioles, bilobed leaf, plicate operculum, purple berry, and transversely sulcate testa. There it belongs to a small group of species that includes *P. sexflora* Jussieu, *P. porphyretica* Masters, *P. rugosissima* Killip, *P. malletii* MacDougal, and an unpublished new large-flowered species from Oaxaca, Mexico, represented by *LeDoux et al. 2308.* This species group is characterized by the absence of laminar nectaries, densely pubescent body, non-variegated leaves, relatively wide bracts, pale greenish yellow flowers with violet overtones, and small purple berries. Most of the species have branched peduncles. This new species is distinct from its close relatives by the narrow leaf lobe angle, deeper lobing, longer pubescence, and bract morphology. It has flowers similar to *P. porphyretica, P. rugosissima,* and variants of *P. sexflora.* It can be distinguished easily from *P. porphyretica* by its branched peduncles and smaller, cut bracts. It differs from *P. rugosissima* in its longer vestiture, narrower angle of the leaf lobes, usually shorter peduncles, and more deeply cut and usually smaller bracts. It differs from *P. sexflora* in its wider and more finely cut bracts, deeper lobing of leaf, longer vestiture, and shorter petioles, and it appears to have a more compressed stem. It has large leaves similar to the new species from Oaxaca, but more deeply lobed; the flowers are smaller and the bracts are smaller and deeply cut, not nearly entire. The relatively deeply bilobed leaf at maturity is unusual and the relatively narrow interlobe angle is unique in this species group.

In the one specimen from Guerrero, the bracts are notably larger and the flowers are smaller, and represent the upper and lower ranges, respectively, in the measurements given above. Although the label of every sample from the Sierra de Manantlán area notes that the plant was "frequent" or "abundant," this species and its ecology are very poorly known. The description of the flower was made from reconstituted wilted flowers at the base of immature fruits and the one flower known at anthesis, from *Pérez de la Rosa 1109.* This species was cited as "*Passiflora* sp. nov. 1" in Vázquez et al. (1995: 211).

Paratypes. **Guerrero:** Mpio. Atoyac, a 26 km al NE de El Paraíso, camino a Puerto del Gallo, 1650 m, 29 Mar. 1983 (fl, fr), *E. Martínez 3795* (MEXU, MO). **Jalisco:** Mpio. Cuautitlán, 3–4 km al SW de La Cumbre, camino al Durazno, 1800–1900 m, 6 Apr. 1987 (fr), *Cuevas & Rosales 1914* (WIS (3), ZEA); Mpio. San Sebastián del Oeste, Km 4 camino La Capilla–El Real Alto, 2300 m, 17 May 1986 (fr), *Pérez de la Rosa 1109* (IBUG); Mpio. San Sebastián del Oeste, brecha San Sebastián del Oeste–Mascota, 1800 m, 18 May 1986 (fl, fr), *Reyna B. 229* (IBUG); camino del puerto de La Moza al Casimiro Castillo, através de la barranca del Tecolote, Ejido de la Naranjera, 15 km al SSE de Autlan, 19°34′30″N, 104°20′30″W, 1600 m, 15 Feb. 1986 (fl, imm. fr), *A. Vázquez 3953* (WIS (2)).

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